**Supplemental data**

**Table e-1:** Number needed to harm (NNH) at various times for patients with and without exposure to sepsis, calculated from adjusted survival probabilities in exposure and control groups

|  |  |  |  |
| --- | --- | --- | --- |
|   | Survival probabilities# |   |   |
|   | Controlno sepsis | Exposuresepsis | ARI## | NNH |
| Time point | Sno sepsis | Ssepsis | Ssepsis - Sno sepsis | (1/|ARI|) |
| 0.25 | 0.9989 | 0.9968 | -0.0021 | 478 |
| 1 | 0.9958 | 0.9900 | -0.0058 | 174 |
| 2 | 0.9918 | 0.9825 | -0.0094 | 107 |
| 3 | 0.9883 | 0.9763 | -0.0120 | 84 |
| 4 | 0.9848 | 0.9706 | -0.0142 | 71 |
| 5 | 0.9817 | 0.9657 | -0.0160 | 63 |
| 6 | 0.9787 | 0.9611 | -0.0176 | 57 |
| 7 | 0.9758 | 0.9568 | -0.0189 | 53 |
| 7.625### | 0.9736 | 0.9536 | -0.0199 | 51 |
| 8 | 0.9720 | 0.9515 | -0.0206 | 49 |
| 9 | 0.9687 | 0.9467 | -0.0220 | 46 |
| 10 | 0.9666 | 0.9439 | -0.0228 | 44 |

Source: Health claims data AOK 2004-2015; # Survival probabilities estimated from Cox-regression models adjusted for time since latest ICU stay, delirium, and surgery, age, gender, cerebrovascular diseases, hypertension, diabetes, hypercholesterolemia, depression, and Parkinson’s disease; ## Absolute Risk Increase; ### mean follow-up time

Survival function displayed the survival from the first quarter of 2006 for those without sepsis and from the quarter of sepsis diagnosis for those with sepsis.

After median follow-up time of 7.625 years, 97.36 percent of persons without sepsis and 95.36 percent with sepsis experienced no incident dementia diagnosis.

**Table e-2:** Cox proportional hazard models with outcome incidence of dementia diagnosis. Patients excluded with prevalent delirium diagnosis (Model 1a-b, 2) and patients excluded with prevalent delirium diagnosis, ICU treatment, or surgery (Model 3)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   |   | Model 1a-b |   |   |   | Model 2 |   |   |   | Model 3 |   |   |   |
|   |   | HR | p | LCI | UCI | HR | p | LCI | UCI | HR | p | LCI | UCI |
| Time since latest | No diagnosis, no ICU (RG) | 1 |   |   |   | 1 |   |   |   |   |   |   |   |
| sepsis diagnosis | No diagnosis, ICU | 4.77 | <0.001 | 4.40 | 5.16 | 2.59 | <0.001 | 2.38 | 2.83 |   |   |   |   |
| by ICU stay in | Quarter 0, no ICU | 5.84 | <0.001 | 5.15 | 6.63 | 4.34 | <0.001 | 3.81 | 4.93 |   |   |   |   |
| quarter 0 | 1-8 quarters, no ICU | 1.64 | <0.001 | 1.42 | 1.90 | 1.53 | <0.001 | 1.32 | 1.77 |   |   |   |   |
|   | 9+ quarters, no ICU | 1.09 | 0.359 | 0.91 | 1.31 | 1.07 | 0.494 | 0.89 | 1.28 |   |   |   |   |
|   | Quarter 0, ICU | 6.78 | <0.001 | 5.32 | 8.63 | 3.45 | <0.001 | 2.70 | 4.41 |   |   |   |   |
|   | 1-8 quarters, ICU | 1.74 | 0.001 | 1.24 | 2.44 | 1.62 | 0.005 | 1.15 | 2.26 |   |   |   |   |
|   | 9+ quarters, ICU | 1.11 | 0.611 | 0.74 | 1.66 | 1.07 | 0.734 | 0.72 | 1.60 |   |   |   |   |
| Time since latest | No surgery (RG) | 1 |   |   |   | 1 |   |   |   |   |   |   |   |
| Surgery | Quarter 0 | 3.54 | <0.001 | 3.37 | 3.71 | 2.84 | <0.001 | 2.69 | 2.99 |   |   |   |   |
|   | 1-8 quarters | 1.09 | <0.001 | 1.05 | 1.13 | 1.07 | 0.001 | 1.03 | 1.11 |   |   |   |   |
|   | 9+ quarters | 1.01 | 0.464 | 0.98 | 1.05 | 1.01 | 0.712 | 0.97 | 1.04 |   |   |   |   |
| Time since latest | No diagnosis (RG) |   |   |   |   |   |   |   |   | 1 |   |   |   |
| sepsis diagnosis | Quarter 0 |   |   |   |   |   |   |   |   | 6.53 | <0.001 | 5.31 | 8.03 |
|   | 1-8 quarters |   |   |   |   |   |   |   |   | 1.97 | <0.001 | 1.53 | 2.53 |
|   | 9+ quarters |   |   |   |   |   |   |   |   | 1.08 | 0.673 | 0.75 | 1.55 |

Source: Health claims data AOK 2004-2015; all models adjusted for age, gender, cerebrovascular diseases, hypertension, diabetes, hypercholesterolemia, depression, and Parkinson’s disease; RG=reference group; HR= Hazard Ratio; LCI: 95 % lower confidence interval, UCI: 95 % upper confidence interval

Model 1a-b, Model 2: Excluding patients with prevalent delirium diagnosis throughout the observation period – N=146,480 with 21,468 incident dementia cases; Models 1a-b show the gross effect of the variable of interest unadjusted for the other information but adjusted for age, gender, cerebrovascular diseases, hypertension, diabetes, hypercholesterolemia, depression, and Parkinson’s disease; Model 2 shows the joint effects of sepsis, ICU stay, and surgery

Model 3: Excluding patients with prevalent delirium diagnosis, ICU treatment, or surgery throughout the observation period – N=84,877 with 10,853 incident dementia cases

**Figure e-1:** Kaplan-Meier survival analysis for cases and controls. Zero (0) signifies date of sepsis before censoring for cases and index date for controls. Patients excluded with prevalent delirium diagnoses during the observation period



Source: Health claims data AOK 2004-2015